

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior version, and listings, of claims in the application:

1. (previously presented) An electromagnetic brake interposed between a fixed housing and a rotating member at least partially accommodated in said fixed housing, comprising:

a multiplate brake mechanism having a plurality of brake plates mounted on said fixed housing and a plurality of brake discs mounted on said rotating member so as to be arranged in alternate relationship with said brake plates;

a ringlike core member fixed in said fixed housing, said ringlike core member having an annular groove and a first tapering surface inclined a first angle with respect to the axis of said ringlike core member;

an annular exciting coil accommodated in said annular groove of said ringlike core member;

a ringlike armature member arranged entirely radially outside of said ringlike core member, said ringlike armature member having a second tapering surface complementary in shape to said first tapering surface, said second tapering surface being opposed to said first tapering surface;

a first annular restriction member provided between the outer circumferential surface of said ringlike core member and the inner circumferential surface of said ringlike armature member at a position adjacent to said first and second tapering surfaces, said first annular restriction member being a ring and restricting radial movement of said ringlike armature member; and

a cylindrical pressure member movable in a direction of pressing said multiplate brake mechanism, said cylindrical pressure member having a first end fixed to an outer circumferential portion of said ringlike armature member and a second end engaged with said multiplate brake mechanism.

2. (original) An electromagnetic brake according to claim 1, wherein said ringlike core member further has a third tapering surface inclined a second angle with respect to the axis of

said ringlike core member; and said ringlike armature member further has a fourth tapering surface complementary in shape to said third tapering surface.

3. (previously presented) An electromagnetic brake interposed between a fixed housing and a rotating member at least partially accommodated in said fixed housing, comprising:

a multiplate brake mechanism having a plurality of brake plates mounted on said fixed housing and a plurality of brake discs mounted on said rotating member so as to be arranged in alternate relationship with said brake plates;

a ringlike core member fixed in said fixed housing, said ringlike core member having an annular groove and a first tapering surface inclined a first angle with respect to the axis of said ringlike core member;

an annular exciting coil accommodated in said annular groove of said ringlike core member;

a ringlike armature member arranged radially outside of said ringlike core member, said ringlike armature member having a second tapering surface complementary in shape to said first tapering surface, said second tapering surface being opposed to said first tapering surface;

a first annular restriction member provided between the outer circumferential surface of said ringlike core member and the inner circumferential surface of said ringlike armature member at a position adjacent to said first and second tapering surfaces;

a cylindrical pressure member movable in a direction of pressing said multiplate brake mechanism, said cylindrical pressure member having a first end fixed to an outer circumferential portion of said ringlike armature member and a second end engaged with said multiplate brake mechanism; and

a second annular restriction member provided between the outer circumferential surface of said ringlike core member and the inner circumferential surface of said ringlike armature member at a position adjacent to said third and fourth tapering surfaces,

wherein said ringlike core member further has a third tapering surface inclined a second angle with respect to the axis of said ringlike core member, and said ringlike armature member further has a fourth tapering surface complementary in shape to said third tapering surface.

4. (original) An electromagnetic brake according to claim 1, further comprising elastic means provided between said ringlike core member and said ringlike armature member for axially exerting an elastic force.

5. (original) An electromagnetic brake according to claim 1, further comprising an annular brake guide having one end fixed to said fixed housing and another end fixed to said ringlike core member;

said annular brake guide being formed of the same type of material as those of said ringlike core member and said ringlike armature member.

6. (currently amended) An electromagnetic brake interposed between a fixed housing and a rotating member at least partially accommodated in said fixed housing, comprising:

a multiplate brake mechanism having a plurality of brake plates mounted on said fixed housing and a plurality of brake discs mounted on said rotating member so as to be arranged in alternate relationship with said brake plates;

a ringlike core member fixed in said fixed housing, said ringlike core member having an annular groove and a first tapering surface inclined a first angle with respect to the axis of said ringlike core member;

an annular exciting coil accommodated in said annular groove of said ringlike core member;

a ringlike armature member arranged entirely radially inside of said ringlike core member, said ringlike armature member having a second tapering surface complementary in shape to said first tapering surface, said second tapering surface being opposed to said first tapering surface;

~~a first annular restriction member provided between the inner circumferential surface of said ringlike core member and the outer circumferential surface of said ringlike armature member at a position adjacent to said first and second tapering surfaces, said first annular restriction member being a ring and restricting radial movement of said ringlike armature member; and~~

a pressure member movable in a direction of pressing said multiplate brake mechanism, said pressure member having a first end fixed to said ringlike armature member and a second end engaged with said multiplate brake mechanism,

wherein said ringlike core member further includes a third tapering surface inclined a second angle with respect to the axis of said ringlike core member, and said ringlike armature member further includes a fourth tapering surface complementary in shape to said third tapering surface, and wherein each of said first to fourth tapering surfaces is inclined in a same direction with respect to the axis of said ringlike core member.

7-8. (canceled)

9. (original) An electromagnetic brake according to claim 6, further comprising an annular brake guide having one end fixed to said fixed housing and another end fixed to said ringlike core member;

said annular brake guide being formed of the same type of material as those of said ringlike core member and said ringlike armature member.

10. (previously presented) An electromagnetic actuator comprising:
a ringlike core member having an annular groove and a first tapering surface inclined a first angle with respect to the axis of said ringlike core member;
an annular exciting coil accommodated in said annular groove of said ringlike core member;

a ringlike armature member arranged entirely radially outside of said ringlike core member, said ringlike armature member having a second tapering surface complementary in shape to said first tapering surface, said second tapering surface being opposed to said first tapering surface; and

an annular restriction member provided between the outer circumferential surface of said ringlike core member and the inner circumferential surface of said ringlike armature member at a position adjacent to said first and second tapering surfaces, said annular restriction member being a ring and restricting radial movement of said ringlike armature member.

11. (original) An electromagnetic actuator according to claim 10, wherein said ringlike core member further has a third tapering surface inclined a second angle with respect to the axis of said ringlike core member; and said ringlike armature member further has a fourth tapering surface complementary in shape to said third tapering surface.

12-13. (canceled)

14. (new) An electromagnetic brake according to claim 6, further comprising a first annular restriction member provided between the inner circumferential surface of said ringlike core member and the outer circumferential surface of said ringlike armature member at a position adjacent to said first and second tapering surfaces, said first annular restriction member being a ring and restricting radial movement of said ringlike armature member.

15. (new) An electromagnetic brake according to claim 14, further comprising a second annular restriction member provided between the inner circumferential surface of said ringlike core member and the outer circumferential surface of said ringlike armature member at a position adjacent to said third and fourth tapering surfaces.